

October 16, 1992

CD-92-17 (LDV)

Dear Manufacturer:

Subject: Workshop on New EPA Dynamometers

As mentioned previously in the letter of September 21, 1992 (CD-92-14), SUBJECT: 48 Inch Single Roll electric Dynamometers, EPA has scheduled a workshop on October 26, 1992 to discuss various technical issues associated with the use of the new 48" single roll electric dynamometer design (agenda enclosed). The workshop will begin at 10:00 A.M. and will be held at the EPA's National Vehicle and Fuel Emissions Laboratory in Ann Arbor, Michigan. If necessary, the workshop may be moved to another location in Ann Arbor depending on the number who indicate that they will be attending. If you will be attending, please check with me a few days prior to the workshop to confirm the location. Because of the proposed open workshop format, no time schedule according to topic has been set. However, we expect that a lunch break will occur at a convenient time around noon, and that we will adjourn in the midafternoon. A draft agenda is enclosed.

Also enclosed is a list of topics on which EPA requests additional information; most of these topics were mentioned in the September 21 letter. EPA also welcomes comments on other relevant topics. I would like to point out that EPA is still in the early stages of transition to the new dynamometer use. At this time, our primary goal is to develop an evaluation program capable of comparing the new dynamometer design and the existing small twin roll design. Because of the resource emphasis being placed on this initial goal and our limited overall experience with this new dynamometer system, we may not be in a position to provide detailed information on a number of long term dynamometer-related issues, specifically what impact the conversion to new dynamometers might have on our emission and fuel economy programs.

I can be reached at (313) 668-4277 if you have any questions or comments in the meantime.

Sincerely,

Robert E. Larson, Associate Director  
Certification Division

Enclosures

Dynamometer Evaluation Workshop

10:00 A.M.  
26 October 1992

Draft Agenda

Introduction

Dynamometer Procurement

Long Term Plan

Dynamometer Evaluation Project

Purpose & Goal

Test Fleet

Test Plan

Open Issues

Open Discussion

Road Load Determination

Problems with Current Practice (A/C-55C)

Possible Revisions

3 Term Equation

Expanded Speed Range

Open Discussion

General Dynamometer Issues

Future Proceedings & Format

List of Topics on Which EPA Requests  
Further Information

Dynamometer Evaluation Program

Stabilized test vehicles. Since we are using vehicles to evaluate dynamometer differences, stable emission and fuel economy characteristics are desirable. While some steps (such as disconnecting the evaporative emissions canister) can make a vehicle more "stable", such a vehicle may no longer be "representative" of typical designs. How should EPA proceed and what sort of test sequence (including vehicle prep) should be followed?

Coastdown data. Should each test vehicle receive a coastdown test or would information from a previously tested representative vehicle be adequate?

Types of Vehicle/Dynamometer Testing -Please recommend what test or combination of tests and measured test outputs would best evaluate any vehicle operating differences that result between the dynamometer types. Similarly, what vehicle operating parameters should be measured to determine test-to-test operating variability not due to dynamometer differences? Also, please include a discussion of how measured variables would be analyzed, quantitatively compared, and evaluated in terms of vehicle operation.

Coastdown/Dynamometer Procedural Considerations

Equation. Road force is currently described using a two term equation ( $F = F_0 + F_2 V^2$ ). It appears that three terms ( $F = F_0 + F_1 V + F_2 V^2$ ) may be necessary if road force is to be matched over a wider speed range. Should a three term equation format be adopted? Is information and analysis available to support use of one form of the equation over another?

Speed Range. The coastdown test procedure specifies a 100 to 30 km/hr speed range. Should this be increased? To what extent is extrapolation appropriate?

Temperature correction factors. Is there information available which could be used to update the tire rolling resistance correction factor? Is a single correction factor appropriate for all tires?

International harmonization. EPA is aware that (some) European countries use a slightly different coastdown procedure. Would changes to EPA's procedures to bring it more in line with such other procedures significantly reduce the amount of manufacturer coastdown testing? Should a revised procedure be written in metric?

Confirmation criteria. When EPA runs a confirmatory road coastdown test, how should the results be compared to the manufacturers' results and what tolerance would be appropriate?

Dynamometer setting. EPA does not foresee any great difficulty in setting the electric dynamometer to reproduce actual road force over an expanded speed range. However, we would appreciate any advice or comments from manufacturers with experience on this topic.

Tire pressure. Because severe, abnormal tire deformation would otherwise occur EPA currently increases tire pressures to 45 psi for testing on the twin roll dynamometer. Since the large diameter single roll dynamometer presents a more "normal" environment, an increase in tire pressure may no longer be necessary. Comments are requested.

#### Miscellaneous

New dynamometer Potential confirmatory test requirements. During the transition period between dynamometer designs EPA will have capability to perform confirmatory tests on the twin roll dynamometer using current procedures or on the large roll dynamometer duplicating road load over a wider speed range. Any manufacturer who may wish to have vehicles confirmatory tested on the new dynamometer should respond as soon as possible.

Coordinating future dynamometer discussions. How should long term discussions of dynamometer related topics be coordinated? Would cooperation between a technical or trade organization and EPA be acceptable to your firm and, if so, what organization?

Contact person. Please provide the name of a contact person for any vehicle-dynamometer issues specific to your firm.